



Intertidal Mudflats

Biodiversity Action Plan



Habitat Description

Mudflats are characterised by high biological productivity and an abundance of organisms, but low diversity with few rare species. The mudflat biota reflects the prevailing physical conditions; where there is a slight increase in the proportion of sand, the polychaete lugworm *Arenicola marina* may occur. In slightly coarser areas, seagrass *Zostera marina* beds can develop. Where stones and shells provide an initial attachment for byssus threads, beds of the blue mussel *Mytilus edulis* occur, such as beneath Peel Castle, where they accrete material through faecal deposition.

The surface of the sediment is often apparently devoid of vegetation, although mats of benthic microalgae (diatoms and euglenoids) are common and produce mucilage that binds the sediment. Under nutrient-rich conditions, often arising from freshwater sources, mats of the macro algae *Ulva intestinalis* form, this is particularly evident in both Ramsey and Derbyhaven bays.

Intertidal mudflats form through the deposition of sediments, mostly silts and clays, in low energy coastal environments with the best examples around the Isle of Man situated in sheltered bays such as Derbyhaven and Port Mooar, Maughold. Mudflats also form, to a lesser extent, along the fringes of smaller rivers such as the Neb; however, in recent years, some intertidal mud habitats have been lost from Manx river mouths due to the installation of tidal-control gates, notably the Glass (Douglas inner harbour) and the Neb (Peel inner harbour).

Intertidal mudflats act to slow down tidal energy, this dissipation of tidal power will facilitate the succession of mudflats into saltmarshes, vegetated shingle and other forms of flood plains. The mud is also able to sequester contaminants such as heightened levels of nutrients and heavy metals thus reducing contamination to adjacent flora and fauna.

Mudflats are highly productive areas which, together with other intertidal habitats, support predatory birds and fish. They provide feeding and resting areas for nationally important populations of migrant and wintering waterfowl and are also key nursery areas for flatfish such as Plaice *Pleuronectes platessa*.

Studies such as Burger, Niles and Clark, 1997 have shown that migratory and wintering waders concentrate on mud flats to feed. However, the presence of mudflats within larger ecosystems is also an important consideration as birds need to utilise adjacent habitats such as shore lines and saltmarshes on which they forage, rest and perform other behaviours when not feeding.

Habitat Area

Total area ha	Largest area ha	Smallest area ha	Mean size ha	% of IoM	% Semi-Nat. Habitat
Unknown	-	-	-	-	-

Threats

Direct disturbance.

Dredging of the soft mud can have a negative effect on sediment biota, its supply and transport. The scouring will result in the removal of the benthos in the areas of works and may impact the rates of sedimentation elsewhere through increased incidents of erosion. Activities which should be prohibited include:

- Bait digging
- Metal detecting

Land claim

Significant areas of mudflats around the Manx harbours and softer northern plains have been lost to coastal squeeze and to impoundment of river mouths for harbour control and marina construction.

Coastal defence

Increasing pressure to construct hard coastal defences around towns has placed further pressures on mudflats as the defence structures have the potential to alter sediment transport patterns and increase wave reflection, both of which can increase erosion.

Invasive Non-Native Species (INNS)

Invasion of alien species such as Cordgrass *Spartina anglica* can dominate areas of the upper mudflat forming continuous meadows and rendering the mud unsuitable for feeding waders and waterfowl. Although invasive non-natives are not one of the more pressing issues around the Manx coast small, isolated patches of cordgrass have been recorded the southern fringes of Langness.

Sea Level Rise¹ and Climate Change

Global mean sea level (GMSL) has risen about 19cm since 1900, at an accelerating rate and was at its highest value ever in 2019. Climate models project a GMSL rise over the next 100 years ranging between 0.29 to 0.59m for low emissions scenario and 0.61 to 1.10 for high emissions scenario. Models that include a faster disintegration of the polar ice sheets predict a rise of up to 2.4m in 21—and up to 15m in 2300 (European sea level rise assessment). The additional prediction of increased summer temperatures may also lead to an increased level of desiccation and erosion in the intertidal area.

¹ <https://www.eea.europa.eu/data-and-maps/indicators/sea-level-rise-7/assessment>

Threats continued

Pollution

Mudflats can be sensitive to nutrient enrichment which is often evident by the formation of a dense mat of microalgae, such as gut weed *Ulva intestinalis*. The alga prevents light reaching the mud surface and may also form anoxic mats which can replace eel grass *Zostera marina*, which are of importance to a range of species. Diffuse and point source discharges from agriculture, industry and urban areas: including polluted storm-water run-off, can create abiotic areas or produce algal mats which may affect invertebrate communities.

Reason for BAP

Restricted habitat less than 0.01% of IoM, important feeding habitat for migrating and wintering birds of conservation concern, threats listed, provides natural flood management.

Linked BAPS

Habitats

- Saltmarsh
- Coastal vegetated shingle
- Seagrass meadows

Species

- Beach nesting birds

Aims

- Maintain the extent of mudflats and associated animal and plant communities
- Maintain the condition of mudflats and associated plant and animal communities
- Set up scheme to routinely survey and monitor condition and of the habitat and establish a base line for conservation of associated flora and fauna.

Delivery Options

Active

Challenges

- Taking steps to reduce the erosion and pollution of intertidal mudflats by decreasing mechanical disturbances, keeping sediment input flowing and monitoring estuarine and coastal water quality.
- Consider the consequences of catchment management and harbour maintenance works.

Yes
Water quality regularly monitored

- Areas of intertidal mudflats such as Derbyhaven are designated as part of a larger ASSI. Other sites such as Ramsey should be considered for similar designation to enhance their protection.

No

Resources
Requires political agreement

- Included within MNR designation. See MNR's byelaws.

Yes

- National Nature Reserve designation for areas of mudflat included in ASSI protection would facilitate further protection in the form of by-laws

No

Resources
Political willingness

Delivery Options	Active	Challenges
<ul style="list-style-type: none"> Providing special protection, such as warden National Nature Reserves, to highly impacted areas important for the persistence of this habitat and the populations it supports. 	No	Resources Political willingness
<ul style="list-style-type: none"> Commitment to protection under OSPAR Agreement – Convention for the Protection of the Marine Environment of the North-East Atlantic. Isle of Man is a Signatory. 	Yes	
<ul style="list-style-type: none"> Monitor extent of INNS 	Yes MWT	Resources
<ul style="list-style-type: none"> Strategy for INNS. The Isle of Man has its own Marine Biosecurity Plan https://www.gov.im/media/1372074/marine-biosecurity-plan-final-2018-080321pdf.pdf 	Yes	
<ul style="list-style-type: none"> Control of INNS 	No	Resources
<ul style="list-style-type: none"> Work with DEFA and DOI to establish stronger development control policies to prevent development in flood risk areas, with the objective of retaining the option to use such areas for the restoration of intertidal flats (known as managed retreat) if required. 	On going	
<ul style="list-style-type: none"> Education/Awareness raising awareness of the significance and effects of disturbance to mudflat avifauna. 	No	Resources
<ul style="list-style-type: none"> Annual review and update of this document 	Dec 2024	

Bibliography

Joanna Burger, Larry Niles, Kathleen E. Clark, Importance of beach, mudflat and marsh habitats to migrant shorebirds on Delaware Bay, Biological Conservation, Volume 79, Issues 2-3, 1997.